Hybrid Computational Systems Based on Cultured Brain Slices
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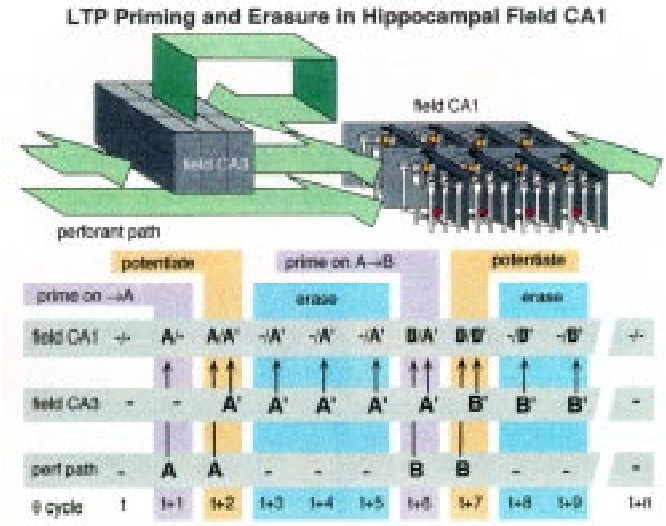

Objective

Attempt to build a novel, brain-based computational device by connecting cultured hippocampal slices to an interface with 64 input/output lines.

Approach

- Connect “visual” input from simulated spatial environment to, and generate spatial cells within, a cultured hippocampal slice
- Analyze slice output for information contained in spatio-temporal patterns of cell activity
- Test interfaces that have greater numbers of input/output connections with cultured slices
- Compute with parallel slices
- Establish bi-directional communication between a cultured slice and an “observer”

Schedule

Year One:
- Develop background stimulation parameters imposing naturally occurring rhythms on cultured slices.

Year Two:
- Prepare a first prototype of the hybrid computational device.

Year Three:
- Establish two-way links between the cultured hippocampal slice and an ‘observer’ in the simulated spatial environment.